federal register

Monday
October 27, 1980

Part XII

Department of Energy

Federal Energy Management and Planning Programs; Methodology and Procedures for Life Cycle Cost Analysis (Average Fuel Costs); Correction and Extension of Comment Period

DEPARTMENT OF ENERGY

10 CFR Part 436

[Docket No. CAS-RM-79-107]

Federal Energy Management and Planning Programs; Methodology and Procedures for Life Cycle Cost Analysis (Average Fuel Costs); Correction and Extension of Comment Period

AGENCY: Department of Energy.

ACTION: Proposed rules; correction and extension of comment period.

SUMMARY: The Department of Energy corrects an inadvertent error in the proposed rule on Methodology and Procedures for Life Cycle Cost Analysis, published on October 7, 1980 (45 FR 66632), and extends the comment period accordingly.

DATE: Comments on the proposed rule, as corrected, must be submitted on or before December 24, 1980.

ADDRESS: Send comments to: Carol Snipes, Office of Hearings and Dockets, Department of Energy, Mail Stop 6B-025, 1000 Independence Avenue, S.W., Washington, D.C. 20585, (202) 252-9319.

FOR FURTHER INFORMATION CONTACT: Jack Vitullo (202) 252-9467, Neal Strauss (202) 252-9519.

SUPPLEMENTARY INFORMATION: On January 23, 1980, the Department of Energy (DOE) published a final Life-Cycle Cost rule (LCC rule) (45 FR 5620), which established the methodology and procedures for estimating and evaluating the life-cycle costs of proposed investments to conserve energy or to increase the use of renewable energy resources in existing and new Federal buildings.

On October 1, 1980, DOE issued a notice of proposed rulemaking to amend the methodology by updating the energy price projections, modifying the discount rate and the study period and inserting minor technical corrections (45 FR 66632, October 7, 1980). As published, the proposed rule contained the original tables of energy price Projections appended to the January 23, 1980, final rule rather than the revised tables which should have appeared. Thus the tables in appendices A, B, and C starting at 45 FR 66635 are in error. This notice substitutes the correct tables for the ones that were printed in error.

To ensure that the public has an adequate opportunity to review the proposed rule, as corrected, DOE is extending the comment period from December 8, 1980, to December 24, 1980.

Authority: Energy Policy and Conservation Act, as amended, 42 U.S.C. 6361(a)(2); Executive Order 11912, as amended by Executive Order 12003, 42 FR 37523 (July 20, 1977); National Energy Conservation Policy Act, as amended, Title V, Part 3, Pub. L. 95-619; Department of Energy Organization Act, 42 U.S.C. 7254.

Issued in Washington, D.C., on October 21, 1980.

Francis D. DeGeorge,

Principal Deputy Assistant Secretary.

The following correction is made to the **Federal Register** notice of proposed rulemaking at 42 FR 66632 (October 7, 1980):

Delete Appendices A, B, and C, at pages 66635-66654 and insert in lieu thereof the following:

BILLING CODE 6450-85-M

Appendix A To Subpart A of Part 436

TABLE A-1. SPW FACTORS, BASED ON A 7 PERCENT DISCOUNT RATE, FOR FINDING THE PRESENT VALUE OF FUTURE NONANNUALLY RECURRING (NONFUEL) AMOUNTS, SUCH AS REPLACEMENT COSTS AND SALVAGE VALUES[1]

Study Period (Years)	Factor
1	
2	0.93
3	0.87
4	0.82
5	0.76
6	0.71
7	0.67
8	0.62
9	0.58
10	0.54
11	0.51
12	0.48
13	0.44
14	0.42
15	0.39
16	0.36
17	0.34
18	0.32
19	0.30
20	0.28
21	0.26
22	0.24
23	0.23
24	0.21
25	0.20
	0.18

[1] The formula for finding the present value (P) of a future amount (F) is the following:

$$P = \frac{F}{(1 + d)^n},$$

where d = the discount rate, and

n = the year in which F occurs.

TABLE A-2. UPW FACTORS, BASED ON A 7 PERCENT DISCOUNT RATE, FOR FINDING THE PRESENT VALUE OF FUTURE ANNUALLY RECURRING (NONFUEL) COSTS, SUCH AS ROUTINE MAINTENANCE COSTS[1]

Study Period (Years)	Factor
1	
2	0.94
3	1.81
4	2.62
5	3.39
6	4.10
7	4.77
8	5.39
9	5.97
10	6.52
11	7.02
12	7.50
13	7.94
14	8.36
15	8.75
16	9.11
17	9.45
18	9.76
19	10.06
20	10.34
21	10.59
22	10.84
23	11.06
24	11.27
25	11.47
	11.65

[1] The formula for finding the present value (P) of an annually recurring uniform amount (A) is the following:

$$P = \frac{A(1 + d)^n - 1}{d(1 + d)^n},$$

where d = the discount rate, and

n = the number of corresponding periods over which A occurs.

TABLE B-1--UPW* DISCOUNT FACTORS ADJUSTED FOR ENERGY PRICE ESCALATION[1]
DOE REGION 1
(MAINE, NEW HAMPSHIRE, VERMONT, MASSACHUSETTS, CONNECTICUT, RHODE ISLAND)

	Residential Sector			Commercial Sector				Industrial Sector				
Study Period[2]	Electricity	Natural Gas	Distillate	Electricity	Natural Gas	Distillate	Residual	Electricity	Natural Gas	Distillate	Residual	Coal
1	0.93	0.95	0.97	0.93	0.95	0.97	1.00	0.93	0.95	0.97	1.01	1.02
2	1.81	1.86	1.90	1.81	1.86	1.90	2.01	1.81	1.86	1.90	2.02	2.07
3	2.62	2.72	2.80	2.62	2.72	2.80	3.03	2.62	2.72	2.80	3.03	3.15
4	3.39	3.54	3.67	3.39	3.53	3.67	4.05	3.39	3.54	3.67	4.05	4.25
5	4.10	4.31	4.52	4.10	4.31	4.51	5.07	4.10	4.32	4.52	5.08	5.38
6	4.76	5.07	5.32	4.76	5.07	5.32	6.06	4.76	5.07	5.33	6.07	6.45
7	5.38	5.79	6.10	5.38	5.80	6.10	7.00	5.38	5.81	6.12	7.03	7.46
8	5.96	6.49	6.85	5.96	6.51	6.85	7.91	5.96	6.52	6.88	7.96	8.43
9	6.50	7.17	7.57	6.50	7.21	7.57	8.78	6.50	7.21	7.62	8.86	9.34
10	7.00	7.83	8.26	7.00	7.88	8.26	9.61	7.00	7.88	8.33	9.73	10.20
11	7.46	8.45	8.93	7.46	8.52	8.94	10.42	7.45	8.53	9.02	10.57	10.98
12	7.86	9.04	9.58	7.87	9.13	9.59	11.22	7.85	9.18	9.70	11.40	11.69
13	8.23	9.61	10.21	8.23	9.71	10.23	11.99	8.21	9.80	10.35	12.21	12.32
14	8.56	10.15	10.82	8.57	10.27	10.85	12.75	8.53	10.42	10.99	13.00	12.90
15	8.86	10.66	11.42	8.86	10.81	11.46	13.49	8.81	11.02	11.61	13.77	13.41
16	9.13	11.15	12.00	9.13	11.31	12.04	14.21	9.07	11.61	12.21	14.52	13.88
17	9.38	11.61	12.56	9.38	11.80	12.61	14.91	9.29	12.19	12.80	15.26	14.30
18	9.60	12.06	13.11	9.59	12.26	13.17	15.60	9.50	12.75	13.37	15.97	14.68
19	9.79	12.48	13.65	9.79	12.71	13.71	16.27	9.68	13.30	13.93	16.67	15.02
20	9.97	12.88	14.16	9.97	13.13	14.23	16.93	9.84	13.84	14.47	17.35	15.33
21	10.13	13.26	14.67	10.13	13.53	14.74	17.57	9.98	14.37	14.99	18.02	15.61
22	10.28	13.63	15.15	10.27	13.92	15.24	18.19	10.11	14.89	15.50	18.67	15.86
23	10.41	13.98	15.63	10.40	14.29	15.73	18.80	10.23	15.39	16.00	19.30	16.09
24	10.52	14.31	16.09	10.52	14.64	16.20	19.40	10.33	15.89	16.48	19.92	16.29
25	10.63	14.62	16.54	10.62	14.97	16.65	19.98	10.42	16.37	16.95	20.53	16.48

[1] These "modified" uniform present worth discount (UPW*) factors are based on a 7 percent discount rate and include the EIA projected real escalation rates in energy prices developed from the Mid-Term Energy Forecasting System (MEFS), for the periods mid-1980 to mid-1985, mid-1985 to mid-1990, and mid-1990 to mid-1995 and beyond. The formula for calculating these UPW* factors is the following: For 1 to k escalation periods,

$$UPW^* = \sum_{j=1}^{n_1} \left(\frac{1+e_1}{1+d}\right)^j + \left(\frac{1+e_1}{1+d}\right)^{n_1} \sum_{j=1}^{n_2} \left(\frac{1+e_2}{1+d}\right)^j + \left(\frac{1+e_1}{1+d}\right)^{n_1} \left(\frac{1+e_2}{1+d}\right)^{n_2} \sum_{j=1}^{n_3} \left(\frac{1+e_3}{1+d}\right)^j + \ldots + \left(\frac{1+e_1}{1+d}\right)^{n_1} \left(\frac{1+e_2}{1+d}\right)^{n_2} \ldots \left(\frac{1+e_{k-1}}{1+d}\right)^{n_{k-1}} \sum_{j=1}^{n_k} \left(\frac{1+e_k}{1+d}\right)^j .$$

where n_k = the length of the period for a given escalation rate in a given period, and the subsqript k indicates the escalation period;

d = the discount rate; and $\sum_{j=1}^{n_k} \left(\frac{1+e}{1+d}\right)^j = \left(\frac{1+e}{d-e}\right)\left(1 - \left(\frac{1+e}{1+d}\right)^{n_k}\right)$.

[2] Study Period 1 is Mid-1980 to Mid-1981.

TABLE B-2--UPW* DISCOUNT FACTORS ADJUSTED FOR ENERGY PRICE ESCALATION[1]
DOE REGION 2
(NEW YORK, NEW JERSEY, PUERTO RICO, VIRGIN ISLANDS)

	Residential Sector			Commercial Sector				Industrial Sector				
Study Period[2]	Electricity	Natural Gas	Distillate	Electricity	Natural Gas	Distillate	Residual	Electricity	Natural Gas	Distillate	Residual	Coal
1	0.93	0.95	0.97	0.93	0.95	0.97	1.00	0.93	0.95	0.97	1.00	1.02
2	1.81	1.86	1.90	1.81	1.86	1.90	2.01	1.81	1.86	1.90	2.01	2.07
3	2.62	2.72	2.80	2.62	2.72	2.80	3.03	2.62	2.72	2.80	3.03	3.14
4	3.39	3.54	3.67	3.39	3.53	3.67	4.05	3.39	3.53	3.67	4.05	4.24
5	4.10	4.31	4.52	4.10	4.31	4.52	5.07	4.10	4.31	4.52	5.07	5.36
6	4.76	5.06	5.33	4.76	5.06	5.33	6.06	4.76	5.07	5.33	6.06	6.43
7	5.37	5.78	6.10	5.37	5.79	6.11	7.00	5.37	5.81	6.11	7.00	7.44
8	5.94	6.47	6.85	.94	6.48	6.85	7.91	5.93	6.54	6.86	7.90	8.41
9	6.47	7.13	7.57	6.47	7.16	7.57	8.78	6.45	7.24	7.58	8.77	9.32
10	6.97	7.77	8.26	6.97	7.81	8.27	9.61	6.94	7.93	8.27	9.60	10.19
11	7.43	8.37	8.93	7.42	8.43	8.94	10.42	7.39	8.61	8.94	10.41	11.01
12	7.85	8.94	9.58	7.85	9.01	9.59	11.22	7.80	9.27	9.60	11.20	11.78
13	8.25	9.49	10.21	8.24	9.58	10.23	11.99	8.19	9.91	10.23	11.97	12.51
14	8.62	10.01	10.82	8.61	10.11	10.85	12.75	8.55	10.54	10.85	12.73	13.20
15	8.96	10.50	11.42	8.96	10.62	11.45	13.48	8.88	11.16	11.46	13.46	13.86
16	9.28	10.97	12.00	9.28	11.11	12.04	14.20	9.19	11.76	12.05	14.17	14.47
17	9.58	11.41	12.56	9.57	11.57	12.61	14.91	9.48	12.35	12.62	14.87	15.05
18	9.86	11.84	13.11	9.85	12.01	13.17	15.59	9.74	12.93	13.17	15.55	15.60
19	10.12	12.24	13.64	10.11	12.43	13.71	16.26	9.99	13.49	13.71	16.21	16.14
20	10.36	12.62	14.16	10.35	12.83	14.23	16.91	10.22	14.04	14.24	16.86	16.60
21	10.58	12.98	14.66	10.57	13.21	14.74	17.55	10.43	14.58	14.75	17.49	17.07
22	10.79	13.33	15.15	10.77	13.57	15.24	18.17	10.63	15.10	15.25	18.11	17.50
23	10.98	13.65	15.62	10.97	13.92	15.72	18.78	10.81	15.61	15.73	18.71	17.91
24	11.16	13.97	16.08	11.15	14.24	16.19	19.37	10.98	16.12	16.20	19.29	18.30
25	11.33	14.26	16.53	11.31	14.56	16.65	19.94	11.14	16.61	16.66	19.86	18.66

[1] These "modified" uniform present worth discount (UPW*) factors are based on a 7 percent discount rate and include the EIA projected real escalation rates in energy prices developed from the Mid-Term Energy Forecasting System (MEFS), for the periods mid-1980 to mid-1985, mid-1985 to mid-1990, and mid-1990 to mid-1995 and beyond. The formula for calculating these UPW* factors is the following: For 1 to k escalation periods,

$$UPW^* = \sum_{j=1}^{n_1} \left(\frac{1+e_1}{1+d}\right)^j + \left(\frac{1+e_1}{1+d}\right)^{n_1} \sum_{j=1}^{n_2} \left(\frac{1+e_2}{1+d}\right)^j + \left(\frac{1+e_1}{1+d}\right)^{n_1} \left(\frac{1+e_2}{1+d}\right)^{n_2} \sum_{j=1}^{n_3} \left(\frac{1+e_3}{1+d}\right)^j + \ldots + \left(\frac{1+e_1}{1+d}\right)^{n_1} \left(\frac{1+e_2}{1+d}\right)^{n_2} \ldots \left(\frac{1+e_{k-1}}{1+d}\right)^{n_{k-1}} \sum_{j=1}^{n_k} \left(\frac{1+e_k}{1+d}\right)^j .$$

where n_k = the length of the period for a given escalation rate in a given period, and the subscript k indicates the escalation period;

d = the discount rate; and $\sum_{j=1}^{n_k} \left(\frac{1+e}{1+d}\right)^j = \left(\frac{1+e}{d-e}\right)\left(1 - \left(\frac{1+e}{1+d}\right)^{n_k}\right)$.

[2] Study Period 1 is Mid-1980 to Mid-1981.

TABLE B-3--UPW* DISCOUNT FACTORS ADJUSTED FOR ENERGY PRICE ESCALATION[1]
DOE REGION 3
(PENNSYLVANIA, MARYLAND, WEST VIRGINIA, VIRGINIA, DISTRICT OF COLUMBIA, DELAWARE)

	Residential Sector			Commercial Sector				Industrial Sector				
Study Period[2]	Electricity	Natural Gas	Distillate	Electricity	Natural Gas	Distillate	Residual	Electricity	Natural Gas	Distillate	Residual	Coal
1	0.93	0.95	0.97	0.93	0.95	0.97	1.00	0.93	0.95	0.97	1.00	1.02
2	1.81	1.86	1.90	1.81	1.86	1.90	2.01	1.81	1.86	1.90	2.01	2.07
3	2.62	2.72	2.80	2.62	2.72	2.80	3.03	2.62	2.72	2.80	3.03	3.15
4	3.39	3.53	3.67	3.39	3.53	3.67	4.05	3.39	3.54	3.67	4.05	4.25
5	4.10	4.31	4.51	4.10	4.31	4.52	5.07	4.10	4.31	4.52	5.07	5.38
6	4.77	5.06	5.32	4.77	5.06	5.32	6.06	4.77	5.11	5.33	6.06	6.46
7	5.40	5.79	6.10	5.40	5.79	6.10	7.00	5.41	5.91	6.10	7.00	7.48
8	6.00	6.48	6.84	6.00	6.50	6.85	7.90	6.01	6.73	6.85	7.90	8.46
9	6.56	7.16	7.56	6.56	7.18	7.57	8.76	6.58	7.57	7.57	8.77	9.39
10	7.09	7.80	8.25	7.10	7.84	8.26	9.59	7.12	8.42	8.26	9.60	10.28
11	7.59	8.42	8.91	7.59	8.47	8.94	10.39	7.62	9.21	8.93	10.41	11.12
12	8.05	9.00	9.56	8.05	9.07	9.59	11.18	8.09	9.93	9.59	11.20	11.91
13	8.48	9.56	10.19	8.48	9.64	10.23	11.95	8.52	10.61	10.22	11.96	12.66
14	8.87	10.08	10.80	8.88	10.18	10.85	12.69	8.93	11.23	10.84	12.71	13.37
15	9.25	10.58	11.39	9.25	10.70	11.45	13.42	9.30	11.81	11.44	13.44	14.04
16	9.59	11.06	11.97	9.60	11.19	12.04	14.13	9.65	12.35	12.02	14.15	14.67
17	9.91	11.51	12.53	9.92	11.66	12.61	14.82	9.97	12.84	12.59	14.85	15.27
18	10.21	11.93	13.07	10.22	12.10	13.16	15.49	10.27	13.30	13.14	15.52	15.83
19	10.49	12.34	13.60	10.50	12.52	13.70	16.14	10.55	13.72	13.68	16.18	16.37
20	10.75	12.72	14.11	10.76	12.93	14.22	16.78	10.81	14.12	14.20	16.82	16.87
21	11.00	13.09	14.60	11.00	13.31	14.73	17.40	11.06	14.48	14.70	17.45	17.35
22	11.22	13.43	15.09	11.23	13.67	15.23	18.01	11.28	14.81	15.20	18.06	17.80
23	11.43	13.76	15.55	11.44	14.02	15.71	18.60	11.49	15.13	15.67	18.65	18.22
24	11.63	14.08	16.01	11.63	14.35	16.18	19.18	11.69	15.41	16.14	19.23	18.63
25	11.81	14.37	16.45	11.81	14.66	16.64	19.74	11.87	15.68	16.59	19.79	19.01

[1] These "modified" uniform present worth discount (UPW*) factors are based on a 7 percent discount rate and include the EIA projected real escalation rates in energy prices developed from the Mid-Term Energy Forecasting System (MEFS), for the periods mid-1980 to mid-1985, mid-1985 to mid-1990, and mid-1990 to mid-1995 and beyond. The formula for calculating these UPW* factors is the following: For 1 to k escalation periods,

$$UPW^* = \sum_{j=1}^{n_1} \left(\frac{1+e_1}{1+d}\right)^j + \left(\frac{1+e_1}{1+d}\right)^{n_1} \sum_{j=1}^{n_2} \left(\frac{1+e_2}{1+d}\right)^j + \left(\frac{1+e_1}{1+d}\right)^{n_1} \left(\frac{1+e_2}{1+d}\right)^{n_2} \sum_{j=1}^{n_3} \left(\frac{1+e_3}{1+d}\right)^j + \ldots + \left(\frac{1+e_1}{1+d}\right)^{n_1} \left(\frac{1+e_2}{1+d}\right)^{n_2} \ldots \left(\frac{1+e_{k-1}}{1+d}\right)^{n_{k-1}} \sum_{j=1}^{n_k} \left(\frac{1+e_k}{1+d}\right)^j,$$

where n_k = the length of the period for a given escalation rate in a given period, and the subscript k indicates the escalation period;

d = the discount rate; and $\sum_{j=1}^{n} \left(\frac{1+e}{1+d}\right)^j = \left(\frac{1+e}{d-e}\right)\left(1 - \left(\frac{1+e}{1+d}\right)^{n_k}\right)$.

[2] Study Period 1 is Mid-1980 to Mid-1981.

TABLE B-4--UPW* DISCOUNT FACTORS ADJUSTED FOR ENERGY PRICE ESCALATION[1]
DOE REGION 4
(KENTUCKY, TENNESSEE, NORTH CAROLINA, SOUTH CAROLINA, MISSISSIPPI, ALABAMA, GEORGIA, FLORIDA, CANAL ZONE)

	Residential Sector			Commercial Sector				Industrial Sector				
Study Period[2]	Electricity	Natural Gas	Distillate	Electricity	Natural Gas	Distillate	Residual	Electricity	Natural Gas	Distillate	Residual	Coal
1	0.93	0.95	0.97	0.93	0.95	0.97	1.00	0.93	0.95	0.97	1.00	1.02
2	1.81	1.86	1.90	1.81	1.85	1.90	2.01	1.81	1.86	1.90	2.01	2.07
3	2.62	2.72	2.80	2.62	2.71	2.80	3.03	2.62	2.72	2.80	3.03	3.15
4	3.39	3.53	3.67	3.39	3.53	3.67	4.05	3.39	3.53	3.67	4.05	4.25
5	4.10	4.31	4.52	4.10	4.31	4.52	5.07	4.10	4.31	4.52	5.07	5.37
6	4.78	5.05	5.32	4.78	5.05	5.32	6.06	4.78	5.10	5.33	6.06	6.44
7	5.42	5.77	6.10	5.42	5.77	6.10	7.00	5.43	5.91	6.10	7.00	7.46
8	6.03	6.45	6.85	6.03	6.46	6.85	7.91	6.05	6.73	6.85	7.91	8.43
9	6.61	7.10	7.56	6.61	7.12	7.57	8.78	6.64	7.56	7.57	8.78	9.35
10	7.17	7.72	8.25	7.16	7.76	8.26	9.62	7.21	8.41	8.26	9.62	10.22
11	7.68	8.31	8.91	7.68	8.36	8.94	10.43	7.74	9.22	8.93	10.43	11.04
12	8.17	8.87	9.56	8.17	8.93	9.59	11.23	8.24	10.01	9.59	11.23	11.82
13	8.63	9.39	10.19	8.63	9.47	10.23	12.01	8.71	10.78	10.22	12.01	12.55
14	9.06	9.89	10.80	9.05	9.98	10.85	12.77	9.16	11.52	10.84	12.77	13.24
15	9.46	10.36	11.39	9.46	10.46	11.45	13.51	9.57	12.23	11.44	13.51	13.88
16	9.84	10.80	11.96	9.84	10.91	12.03	14.23	9.96	12.92	12.02	14.24	14.49
17	10.20	11.21	12.52	10.19	11.34	12.60	14.94	10.33	13.59	12.59	14.95	15.07
18	10.53	11.61	13.06	10.53	11.75	13.16	15.63	10.68	14.23	13.14	15.64	15.61
19	10.85	11.98	13.59	10.84	12.14	13.70	16.31	11.01	14.85	13.68	16.32	16.12
20	11.14	12.33	14.10	11.13	12.50	14.22	16.97	11.31	15.46	14.20	16.98	16.60
21	11.42	12.66	14.59	11.41	12.84	14.73	17.61	11.60	16.04	14.71	17.63	17.05
22	11.68	12.97	15.07	11.67	13.17	15.22	18.24	11.87	16.60	15.20	18.26	17.48
23	11.92	13.27	15.54	11.91	13.48	15.71	18.86	12.13	17.14	15.68	18.88	17.88
24	12.15	13.55	15.99	12.14	13.77	16.17	19.46	12.37	17.67	16.15	19.48	18.26
25	12.37	13.81	16.43	12.36	14.04	16.63	20.04	12.59	18.17	16.60	20.07	18.61

[1] These "modified" uniform present worth discount (UPW*) factors are based on a 7 percent discount rate and include the EIA projected real escalation rates in energy prices developed from the Mid-Term Energy Forecasting System (MEFS), for the periods mid-1980 to mid-1985, mid-1985 to mid-1990, and mid-1990 to mid-1995 and beyond. The formula for calculating these UPW* factors is the following: For 1 to k escalation periods,

$$UPW^* = \sum_{j=1}^{n_1} \left(\frac{1+e_1}{1+d}\right)^j + \left(\frac{1+e_1}{1+d}\right)^{n_1} \sum_{j=1}^{n_2} \left(\frac{1+e_2}{1+d}\right)^j + \left(\frac{1+e_1}{1+d}\right)^{n_1} \left(\frac{1+e_2}{1+d}\right)^{n_2} \sum_{j=1}^{n_3} \left(\frac{1+e_3}{1+d}\right)^j + \ldots + \left(\frac{1+e_1}{1+d}\right)^{n_1} \left(\frac{1+e_2}{1+d}\right)^{n_2} \ldots \left(\frac{1+e_{k-1}}{1+d}\right)^{n_{k-1}} \sum_{j=1}^{n_k} \left(\frac{1+e_k}{1+d}\right)^j .$$

where n_k = the length of the period for a given escalation rate in a given period, and the subscript k indicates the escalation period;

d = the discount rate; and $\sum_{j=1}^{n_k} \left(\frac{1+e}{1+d}\right)^j = \left(\frac{1+e}{d-e}\right)\left(1 - \left(\frac{1+e}{1+d}\right)^{n_k}\right)$.

[2] Study Period 1 is Mid-1980 to Mid-1981.

TABLE B-5--UPW* DISCOUNT FACTORS ADJUSTED FOR ENERGY PRICE ESCALATION[1]
DOE REGION 5
(MINNESOTA, WISCONSIN, MICHIGAN, ILLINOIS, INDIANA, OHIO)

	Residential Sector			Commercial Sector				Industrial Sector				
Study Period[2]	Electricity	Natural Gas	Distillate	Electricity	Natural Gas	Distillate	Residual	Electricity	Natural Gas	Distillate	Residual	Coal
1	0.93	0.95	0.97	0.93	0.95	0.97	1.01	0.93	0.95	0.97	1.01	1.02
2	1.81	1.86	1.90	1.81	1.85	1.90	2.02	1.81	1.86	1.90	2.02	2.07
3	2.62	2.72	2.80	2.62	2.71	2.80	3.03	2.62	2.72	2.80	3.03	3.14
4	3.39	3.53	3.67	3.39	3.53	3.67	4.05	3.39	3.53	3.67	4.05	4.24
5	4.10	4.31	4.51	4.10	4.31	4.52	5.08	4.10	4.31	4.52	5.08	5.36
6	4.77	5.06	5.32	4.77	5.06	5.33	6.06	4.78	5.09	5.33	6.06	6.43
7	5.41	5.78	6.10	5.41	5.78	6.11	7.01	5.42	5.87	6.11	7.01	7.44
8	6.01	6.47	6.85	6.01	6.48	6.86	7.92	6.02	6.65	6.86	7.91	8.40
9	6.57	7.13	7.57	6.57	7.15	7.58	8.79	6.60	7.42	7.58	8.78	9.31
10	7.11	7.77	8.26	7.11	7.80	8.28	9.62	7.15	8.20	8.28	9.62	10.18
11	7.61	8.37	8.94	7.61	8.41	8.95	10.44	7.66	8.96	8.95	10.44	11.00
12	8.07	8.94	9.59	8.08	8.98	9.61	11.24	8.13	9.69	9.61	11.23	11.78
13	8.51	9.47	10.23	8.51	9.53	10.26	12.02	8.58	10.40	10.26	12.02	12.51
14	8.92	9.98	10.85	8.92	10.05	10.88	12.78	8.99	11.09	10.88	12.78	13.20
15	9.29	10.46	11.46	9.30	10.53	11.49	13.52	9.38	11.77	11.49	13.52	13.85
16	9.65	10.91	12.04	9.65	11.00	12.08	14.25	9.74	12.42	12.08	14.25	14.46
17	9.98	11.33	12.61	9.98	11.43	12.66	14.96	10.07	13.05	12.66	14.96	15.04
18	10.29	11.73	13.17	10.29	11.84	13.22	15.66	10.39	13.67	13.22	15.66	15.59
19	10.57	12.11	13.71	10.58	12.23	13.77	16.34	10.68	14.27	13.77	16.34	16.10
20	10.84	12.47	14.24	10.85	12.60	14.31	17.00	10.95	14.85	14.31	17.00	16.59
21	11.09	12.80	14.75	11.10	12.95	14.83	17.65	11.21	15.41	14.83	17.65	17.05
22	11.33	13.12	15.25	11.33	13.27	15.33	18.28	11.44	15.96	15.33	18.29	17.48
23	11.54	13.42	15.73	11.55	13.58	15.82	18.90	11.66	16.49	15.82	18.91	17.89
24	11.75	13.71	16.20	11.76	13.88	16.30	19.51	11.87	17.01	16.30	19.52	18.28
25	11.94	13.97	16.66	11.95	14.15	16.77	20.10	12.06	17.51	16.77	20.11	18.64

[1] These "modified" uniform present worth discount (UPW*) factors are based on a 7 percent discount rate and include the EIA projected real escalation rates in energy prices developed from the Mid-Term Energy Forecasting System (MEFS), for the periods mid-1980 to mid-1985, mid-1985 to mid-1990, and mid-1990 to mid-1995 and beyond. The formula for calculating these UPW* factors is the following: For 1 to k escalation periods,

$$UPW^* = \sum_{j=1}^{n_1} \left(\frac{1+e_1}{1+d}\right)^j + \left(\frac{1+e_1}{1+d}\right)^{n_1} \sum_{j=1}^{n_2} \left(\frac{1+e_2}{1+d}\right)^j + \left(\frac{1+e_1}{1+d}\right)^{n_1} \left(\frac{1+e_2}{1+d}\right)^{n_2} \sum_{j=1}^{n_3} \left(\frac{1+e_3}{1+d}\right)^j + \ldots + \left(\frac{1+e_1}{1+d}\right)^{n_1} \left(\frac{1+e_2}{1+d}\right)^{n_2} \ldots \left(\frac{1+e_{k-1}}{1+d}\right)^{n_{k-1}} \sum_{j=1}^{n_k} \left(\frac{1+e_k}{1+d}\right)^j,$$

where n_k = the length of the period for a given escalation rate in a given period, and the subscript k indicates the escalation period;

d = the discount rate; and $\sum_{j=1}^{n_k} \left(\frac{1+e}{1+d}\right)^j = \left(\frac{1+e}{d-e}\right)\left(1 - \left(\frac{1+e}{1+d}\right)^{n_k}\right)$.

[2] Study Period 1 is Mid-1980 to Mid-1981.

TABLE B-6--UPW* DISCOUNT FACTORS ADJUSTED FOR ENERGY PRICE ESCALATION[1]
DOE REGION 6
(TEXAS, NEW MEXICO, OKLAHOMA, ARKANSAS, LOUISIANA)

	Residential Sector			Commercial Sector				Industrial Sector				
Study Period[2]	Electricity	Natural Gas	Distillate	Electricity	Natural Gas	Distillate	Residual	Electricity	Natural Gas	Distillate	Residual	Coal
1	0.93	0.95	0.97	0.93	0.95	0.97	1.00	0.93	0.95	0.97	1.01	1.02
2	1.81	1.86	1.90	1.81	1.85	1.90	2.01	1.81	1.86	1.90	2.01	2.07
3	2.62	2.72	2.80	2.62	2.71	2.80	3.03	2.62	2.72	2.80	3.03	3.15
4	3.39	3.53	3.67	3.39	3.53	3.67	4.05	3.39	3.54	3.67	4.05	4.25
5	4.10	4.31	4.51	4.10	4.31	4.51	5.07	4.10	4.32	4.52	5.07	5.38
6	4.77	5.07	5.32	4.78	5.07	5.32	6.06	4.78	5.09	5.33	6.06	6.45
7	5.42	5.81	6.10	5.42	5.83	6.10	7.00	5.43	5.85	6.10	7.00	7.46
8	6.02	6.54	6.85	[illegible].03	6.57	6.85	7.91	6.04	6.61	6.85	7.91	8.43
9	6.60	7.25	7.57	[illegible].61	7.29	7.57	8.78	6.63	7.35	7.58	8.78	9.34
10	7.15	7.94	8.26	7.16	8.01	8.27	9.61	7.19	8.09	8.27	9.62	10.20
11	7.66	8.60	8.93	7.67	8.70	8.94	10.43	7.72	8.80	8.94	10.43	11.02
12	8.14	9.23	9.58	8.15	9.36	9.60	11.22	8.20	9.49	9.60	11.23	11.78
13	8.58	9.84	10.21	8.60	9.99	10.24	12.00	8.66	10.14	10.24	12.01	12.50
14	8.99	10.42	10.83	9.01	10.59	10.86	12.76	9.08	10.78	10.86	12.77	13.17
15	9.38	10.97	11.43	9.40	11.18	11.46	13.51	9.47	11.38	11.47	13.52	13.81
16	9.74	11.50	12.01	9.76	11.74	12.05	14.24	9.84	11.97	12.06	14.24	14.41
17	10.07	12.01	12.58	10.10	12.27	12.63	14.95	10.18	12.53	12.63	14.96	14.97
18	10.39	12.49	13.12	10.41	12.79	13.18	15.64	10.50	13.07	13.19	15.65	15.49
19	10.68	12.96	13.66	10.70	13.28	13.73	16.32	10.80	13.59	13.73	16.33	15.99
20	10.95	13.40	14.18	10.98	13.75	14.25	16.98	11.07	14.09	14.26	16.99	16.46
21	11.20	13.82	14.68	11.23	14.21	14.77	17.63	11.33	14.57	14.78	17.64	16.90
22	11.44	14.23	15.17	11.47	14.64	15.27	18.26	11.57	15.03	15.28	18.28	17.31
23	11.66	14.62	15.65	11.69	15.06	15.75	18.88	11.79	15.48	15.76	18.90	17.70
24	11.86	14.99	16.11	11.89	15.46	16.23	19.49	12.00	15.91	16.24	19.50	18.06
25	12.05	15.34	16.56	12.08	15.85	16.69	20.08	12.19	16.32	16.70	20.09	18.40

[1] These "modified" uniform present worth discount (UPW*) factors are based on a 7 percent discount rate and include the EIA projected real escalation rates in energy prices developed from the Mid-Term Energy Forecasting System (MEFS), for the periods mid-1980 to mid-1985, mid-1985 to mid-1990, and mid-1990 to mid-1995 and beyond. The formula for calculating these UPW* factors is the following: For 1 to k escalation periods,

$$UPW^* = \sum_{j=1}^{n_1} \left(\frac{1+e_1}{1+d}\right)^j + \left(\frac{1+e_1}{1+d}\right)^{n_1} \sum_{j=1}^{n_2} \left(\frac{1+e_2}{1+d}\right)^j + \left(\frac{1+e_1}{1+d}\right)^{n_1} \left(\frac{1+e_2}{1+d}\right)^{n_2} \sum_{j=1}^{n_3} \left(\frac{1+e_3}{1+d}\right)^j + \ldots + \left(\frac{1+e_1}{1+d}\right)^{n_1} \left(\frac{1+e_2}{1+d}\right)^{n_2} \ldots \left(\frac{1+e_{k-1}}{1+d}\right)^{n_{k-1}} \sum_{j=1}^{n_k} \left(\frac{1+e_k}{1+d}\right)^j .$$

where n_k = the length of the period for a given escalation rate in a given period, and the subscript k indicates the escalation period;

d = the discount rate; and $\sum_{j=1}^{n_k} \left(\frac{1+e}{1+d}\right)^j = \left(\frac{1+e}{d-e}\right)\left(1 - \left(\frac{1+e}{1+d}\right)^{n_k}\right)$.

[2] Study Period 1 is Mid-1980 to Mid-1981.

TABLE B-7--UPW* DISCOUNT FACTORS ADJUSTED FOR ENERGY PRICE ESCALATION[1]
DOE REGION 7
(KANSAS, MISSOURI, IOWA, NEBRASKA)

	Residential Sector			Commercial Sector				Industrial Sector				
Study Period[2]	Electricity	Natural Gas	Distillate	Electricity	Natural Gas	Distillate	Residual	Electricity	Natural Gas	Distillate	Residual	Coal
1	0.93	0.95	0.97	0.93	0.95	0.97	1.01	0.93	0.95	0.97	1.01	1.02
2	1.81	1.86	1.90	1.81	1.85	1.90	2.02	1.81	1.86	1.90	2.02	2.07
3	2.62	2.72	2.80	2.62	2.71	2.80	3.03	2.62	2.71	2.80	3.03	3.14
4	3.39	3.53	3.67	3.39	3.53	3.67	4.05	3.39	3.53	3.67	4.05	4.24
5	4.10	4.31	4.52	4.10	4.31	4.52	5.08	4.10	4.31	4.52	5.08	5.36
6	4.76	5.06	5.33	4.76	5.06	5.33	6.06	4.76	5.12	5.33	6.06	6.43
7	5.37	5.79	6.10	5.38	5.79	6.11	7.01	5.37	5.97	6.11	7.01	7.44
8	5.95	6.49	6.85	.95	6.51	6.86	7.92	5.94	6.85	6.86	7.91	8.41
9	6.48	7.17	7.58	6.48	7.19	7.58	8.79	6.47	7.78	7.59	8.78	9.33
10	6.97	7.83	8.27	6.97	7.86	8.28	9.62	6.95	8.74	8.28	9.62	10.20
11	7.43	8.45	8.94	7.43	8.50	8.96	10.44	7.41	9.73	8.96	10.43	11.02
12	7.86	9.04	9.60	7.86	9.10	9.62	11.23	7.84	10.75	9.62	11.23	11.80
13	8.26	9.59	10.24	8.26	9.67	10.27	12.01	8.23	11.78	10.27	12.01	12.52
14	8.64	10.12	10.86	8.64	10.21	10.89	12.77	8.61	12.85	10.89	12.77	13.21
15	8.99	10.62	11.47	8.99	10.72	11.50	13.52	8.95	13.94	11.51	13.51	13.86
16	9.32	11.09	12.06	9.31	11.20	12.10	14.24	9.28	15.05	12.10	14.24	14.47
17	9.62	11.53	12.63	9.62	11.66	12.68	14.95	9.58	16.19	12.68	14.95	15.04
18	9.91	11.95	13.19	9.91	12.10	13.24	15.65	9.87	17.36	13.25	15.64	15.58
19	10.18	12.35	13.73	10.17	12.51	13.79	16.32	10.13	18.56	13.80	16.32	16.09
20	10.43	12.73	14.26	10.42	12.90	14.33	16.99	10.38	19.79	14.33	16.98	16.57
21	10.66	13.09	14.78	10.66	13.27	14.85	17.63	10.61	21.04	14.85	17.63	17.02
22	10.88	13.42	15.28	10.87	13.62	15.36	18.26	10.83	22.33	15.36	18.26	17.44
23	11.08	13.74	15.76	11.08	13.95	15.85	18.88	11.03	23.65	15.86	18.88	17.84
24	11.27	14.04	16.24	11.27	14.26	16.33	19.48	11.22	25.00	16.34	19.48	18.22
25	11.45	14.33	16.70	11.45	14.56	16.80	20.07	11.39	26.38	16.81	20.07	18.57

[1] These "modified" uniform present worth discount (UPW*) factors are based on a 7 percent discount rate and include the EIA projected real escalation rates in energy prices developed from the Mid-Term Energy Forecasting System (MEFS), for the periods mid-1980 to mid-1985, mid-1985 to mid-1990, and mid-1990 to mid-1995 and beyond. The formula for calculating these UPW* factors is the following: For 1 to k escalation periods,

$$UPW^* = \sum_{j=1}^{n_1} \left(\frac{1+e_1}{1+d}\right)^j + \left(\frac{1+e_1}{1+d}\right)^{n_1} \sum_{j=1}^{n_2} \left(\frac{1+e_2}{1+d}\right)^j + \left(\frac{1+e_1}{1+d}\right)^{n_1} \left(\frac{1+e_2}{1+d}\right)^{n_2} \sum_{j=1}^{n_3} \left(\frac{1+e_3}{1+d}\right)^j + \ldots + \left(\frac{1+e_1}{1+d}\right)^{n_1} \left(\frac{1+e_2}{1+d}\right)^{n_2} \ldots \left(\frac{1+e_{k-1}}{1+d}\right)^{n_{k-1}} \sum_{j=1}^{n_k} \left(\frac{1+e_k}{1+d}\right)^j .$$

where n_k = the length of the period for a given escalation rate in a given period, and the subscript k indicates the escalation period;

d = the discount rate; and $\sum_{j=1}^{n_k} \left(\frac{1+e}{1+d}\right)^j = \left(\frac{1+e}{d-e}\right)\left(1 - \left(\frac{1+e}{1+d}\right)^{n_k}\right)$.

[2] Study Period 1 is Mid-1980 to Mid-1981.

TABLE B-8--UPW* DISCOUNT FACTORS ADJUSTED FOR ENERGY PRICE ESCALATION[1]
DOE REGION 8
(MONTANA, NORTH DAKOTA, SOUTH DAKOTA, WYOMING, UTAH, COLORADO)

	Residential Sector			Commercial Sector				Industrial Sector				
Study Period[2]	Electricity	Natural Gas	Distillate	Electricity	Natural Gas	Distillate	Residual	Electricity	Natural Gas	Distillate	Residual	Coal
1	0.93	0.95	0.97	0.93	0.95	0.97	1.00	0.93	0.95	0.97	1.00	1.02
2	1.81	1.86	1.90	1.81	1.86	1.90	2.01	1.81	1.86	1.90	2.01	2.07
3	2.62	2.72	2.80	2.62	2.71	2.80	3.03	2.62	2.72	2.80	3.03	3.13
4	3.39	3.53	3.67	3.39	3.53	3.67	4.05	3.39	3.54	3.67	4.05	4.22
5	4.10	4.31	4.52	4.10	4.31	4.52	5.07	4.10	4.32	4.51	5.07	5.33
6	4.75	5.07	5.32	4.74	5.07	5.32	6.05	4.74	5.08	5.32	6.06	6.37
7	5.33	5.80	6.10	5.33	5.81	6.10	7.00	5.31	5.83	6.10	7.00	7.34
8	5.87	6.51	6.85	5.86	6.52	6.85	7.90	5.82	6.57	6.85	7.91	8.25
9	6.36	7.21	7.57	6.34	7.22	7.57	8.77	6.29	7.29	7.57	8.78	9.10
10	6.80	7.88	8.26	6.78	7.91	8.27	9.60	6.70	7.99	8.26	9.61	9.89
11	7.20	8.52	8.93	7.18	8.56	8.94	10.42	7.07	8.67	8.94	10.43	10.64
12	7.57	9.14	9.58	7.54	9.18	9.60	11.21	7.40	9.33	9.59	11.23	11.34
13	7.90	9.73	10.22	7.87	9.78	10.24	11.99	7.70	9.96	10.23	12.01	12.00
14	8.21	10.29	10.83	8.17	10.36	10.86	12.75	7.97	10.56	10.85	12.77	12.62
15	8.49	10.83	11.43	8.44	10.91	11.47	13.50	8.21	11.14	11.46	13.52	13.20
16	8.74	11.35	12.02	8.68	11.43	12.06	14.22	8.43	11.70	12.05	14.25	13.75
17	8.97	11.84	12.59	8.91	11.94	12.63	14.94	8.62	12.23	12.62	14.96	14.27
18	9.18	12.31	13.14	9.11	12.42	13.19	15.63	8.80	12.75	13.18	15.66	14.75
19	9.38	12.77	13.67	9.30	12.88	13.74	16.31	8.96	13.24	13.72	16.34	15.21
20	9.55	13.20	14.20	9.47	13.33	14.27	16.97	9.10	13.72	14.25	17.01	15.64
21	9.71	13.61	14.71	9.62	13.75	14.78	17.62	9.22	14.18	14.77	17.67	16.04
22	9.86	14.01	15.20	9.76	14.16	15.29	18.26	9.34	14.62	15.27	18.30	16.42
23	9.99	14.38	15.68	9.89	14.55	15.78	18.88	9.44	15.04	15.75	18.93	16.78
24	10.11	14.75	16.15	10.00	14.92	16.25	19.49	9.53	15.45	16.23	19.54	17.11
25	10.22	15.09	16.60	10.11	15.28	16.72	20.08	9.61	15.84	16.69	20.14	17.43

[1] These "modified" uniform present worth discount (UPW*) factors are based on a 7 percent discount rate and include the EIA projected real escalation rates in energy prices developed from the Mid-Term Energy Forecasting System (MEFS), for the periods mid-1980 to mid-1985, mid-1985 to mid-1990, and mid-1990 to mid-1995 and beyond. The formula for calculating these UPW* factors is the following: For 1 to k escalation periods,

$$UPW^* = \sum_{j=1}^{n_1} \left(\frac{1+e_1}{1+d}\right)^j + \left(\frac{1+e_1}{1+d}\right)^{n_1} \sum_{j=1}^{n_2} \left(\frac{1+e_2}{1+d}\right)^j + \left(\frac{1+e_1}{1+d}\right)^{n_1} \left(\frac{1+e_2}{1+d}\right)^{n_2} \sum_{j=1}^{n_3} \left(\frac{1+e_3}{1+d}\right)^j + \ldots + \left(\frac{1+e_1}{1+d}\right)^{n_1} \left(\frac{1+e_2}{1+d}\right)^{n_2} \ldots \left(\frac{1+e_{k-1}}{1+d}\right)^{n_{k-1}} \sum_{j=1}^{n_k} \left(\frac{1+e_k}{1+d}\right)^j,$$

where n_k = the length of the period for a given escalation rate in a given period, and the subscript k indicates the escalation period;

d = the discount rate; and $\sum_{j=1}^{n} \left(\frac{1+e}{1+d}\right)^j = \left(\frac{1+e}{d-e}\right)\left(1 - \left(\frac{1+e}{1+d}\right)^{n_k}\right)$.

[2] Study Period 1 is Mid-1980 to Mid-1981.

TABLE B-9--UPW* DISCOUNT FACTORS ADJUSTED FOR ENERGY PRICE ESCALATION[1]
DOE REGION 9
(CALIFORNIA, NEVADA, ARIZONA, HAWAII, TRUST TERRITORY OF THE PACIFIC ISLANDS, AMERICAN SAMOA, GUAM)

	Residential Sector			Commercial Sector				Industrial Sector				
Study Period[2]	Electricity	Natural Gas	Distillate	Electricity	Natural Gas	Distillate	Residual	Electricity	Natural Gas	Distillate	Residual	Coal
1	0.93	0.95	0.97	0.93	0.95	0.97	1.00	0.93	0.95	0.97	1.00	1.02
2	1.81	1.86	1.90	1.81	1.86	1.90	2.01	1.81	1.86	1.90	2.01	2.07
3	2.62	2.72	2.80	2.62	2.72	2.80	3.03	2.62	2.72	2.80	3.03	3.15
4	3.39	3.53	3.67	3.39	3.53	3.67	4.05	3.39	3.54	3.67	4.05	4.25
5	4.10	4.31	4.51	4.10	4.31	4.51	5.07	4.10	4.32	4.51	5.07	5.37
6	4.77	5.05	5.32	4.77	5.05	5.33	6.05	4.77	5.07	5.33	6.06	6.44
7	5.40	5.75	6.10	5.40	5.75	6.11	7.00	5.40	5.79	6.11	7.00	7.45
8	5.99	6.41	6.85	5.98	6.42	6.86	7.91	5.99	6.49	6.88	7.91	8.40
9	6.54	7.04	7.58	6.54	7.05	7.59	8.78	6.54	7.17	7.58	8.79	9.31
10	7.06	7.64	8.27	7.06	7.66	8.28	9.62	7.07	7.82	8.28	9.63	10.17
11	7.53	8.20	8.95	7.53	8.22	8.97	10.44	7.54	8.44	8.97	10.45	10.98
12	7.97	8.72	9.60	7.96	8.75	9.63	11.25	7.97	9.02	9.63	11.26	11.74
13	8.36	9.21	10.24	8.36	9.25	10.28	12.03	8.36	9.56	10.28	12.05	12.46
14	8.72	9.67	10.87	8.72	9.71	10.91	12.80	8.72	10.08	10.91	12.82	13.14
15	9.05	10.10	11.47	9.05	10.15	11.52	13.55	9.04	10.57	11.52	13.57	13.79
16	9.35	10.51	12.06	9.36	10.55	12.12	14.29	9.34	11.03	12.12	14.31	14.39
17	9.63	10.88	12.64	9.63	10.94	12.70	15.01	9.60	11.46	12.70	15.03	14.96
18	9.88	11.24	13.20	9.89	11.30	13.27	15.71	9.84	11.87	13.27	15.74	15.50
19	10.10	11.57	13.74	10.12	11.63	13.83	16.40	10.07	12.25	13.83	16.43	16.01
20	10.31	11.88	14.27	10.33	11.95	14.37	17.08	10.27	12.62	14.37	17.10	16.49
21	10.50	12.17	14.78	10.52	12.24	14.89	17.74	10.45	12.96	14.89	17.76	16.94
22	10.68	12.45	15.29	10.70	12.52	15.40	18.38	10.61	13.28	15.40	18.41	17.37
23	10.83	12.70	15.77	10.86	12.78	15.90	19.01	10.76	13.59	15.90	19.04	17.77
24	10.98	12.94	16.25	11.01	13.02	16.39	19.63	10.90	13.88	16.39	19.66	18.15
25	11.11	13.17	16.71	11.14	13.25	16.87	20.24	11.02	14.15	16.87	20.27	18.51

[1] These "modified" uniform present worth discount (UPW*) factors are based on a 7 percent discount rate and include the EIA projected real escalation rates in energy prices developed from the Mid-Term Energy Forecasting System (MEFS), for the periods mid-1980 to mid-1985, mid-1985 to mid-1990, and mid-1990 to mid-1995 and beyond. The formula for calculating these UPW* factors is the following: For 1 to k escalation periods,

$$UPW^* = \sum_{j=1}^{n_1} \left(\frac{1+e_1}{1+d}\right)^j + \left(\frac{1+e_1}{1+d}\right)^{n_1} \sum_{j=1}^{n_2} \left(\frac{1+e_2}{1+d}\right)^j + \left(\frac{1+e_1}{1+d}\right)^{n_1} \left(\frac{1+e_2}{1+d}\right)^{n_2} \sum_{j=1}^{n_3} \left(\frac{1+e_3}{1+d}\right)^j + \ldots + \left(\frac{1+e_1}{1+d}\right)^{n_1} \left(\frac{1+e_2}{1+d}\right)^{n_2} \ldots \left(\frac{1+e_{k-1}}{1+d}\right)^{n_{k-1}} \sum_{j=1}^{n_k} \left(\frac{1+e_k}{1+d}\right)^j .$$

where n_k = the length of the period for a given escalation rate in a given period, and the subscript k indicates the escalation period;

d = the discount rate; and $\sum_{j=1}^{n_k} \left(\frac{1+e}{1+d}\right)^j = \left(\frac{1+e}{d-e}\right)\left(1 - \left(\frac{1+e}{1+d}\right)^{n_k}\right)$.

[2] Study Period 1 is Mid-1980 to Mid-1981.

TABLE B-10--UPW* DISCOUNT FACTORS ADJUSTED FOR ENERGY PRICE ESCALATION[1]
DOE REGION 10
(WASHINGTON, OREGON, IDAHO, ALASKA)

	Residential Sector			Commercial Sector				Industrial Sector				
Study Period[2]	Electricity	Natural Gas	Distillate	Electricity	Natural Gas	Distillate	Residual	Electricity	Natural Gas	Distillate	Residual	Coal
1	0.93	0.95	0.97	0.93	0.95	0.97	1.01	0.93	0.95	0.97	1.01	1.02
2	1.81	1.86	1.90	1.81	1.86	1.90	2.02	1.81	1.86	1.90	2.02	2.07
3	2.62	2.72	2.80	2.62	2.72	2.80	3.03	2.62	2.72	2.80	3.03	3.15
4	3.39	3.54	3.67	3.39	3.53	3.67	4.05	3.38	3.54	3.67	4.05	4.24
5	4.10	4.31	4.51	4.10	4.31	4.51	5.08	4.09	4.31	4.51	5.08	5.37
6	4.79	5.07	5.32	4.79	5.07	5.33	6.07	4.81	5.09	5.33	6.06	6.45
7	5.46	5.80	6.10	5.46	5.81	6.11	7.02	5.53	5.86	6.11	7.01	7.48
8	6.11	6.52	6.85	6.12	6.54	6.86	7.93	6.26	6.62	6.86	7.92	8.46
9	6.74	7.21	7.58	6.75	7.25	7.59	8.81	7.00	7.37	7.59	8.80	9.41
10	7.36	7.88	8.27	7.37	7.94	8.28	9.66	7.74	8.12	8.28	9.64	10.31
11	7.94	8.49	8.95	7.95	8.56	8.97	10.49	8.45	8.85	8.97	10.47	11.13
12	8.49	9.04	9.60	8.50	9.12	9.63	11.30	9.12	9.56	9.63	11.27	11.87
13	9.00	9.53	10.24	9.02	9.63	10.28	12.09	9.76	10.25	10.28	12.06	12.55
14	9.49	9.99	10.87	9.52	10.08	10.91	12.87	10.37	10.92	10.91	12.84	13.15
15	9.95	10.39	11.47	9.98	10.50	11.52	13.63	10.96	11.57	11.52	13.59	13.72
16	10.39	10.76	12.06	10.42	10.87	12.12	14.38	11.51	12.20	12.12	14.33	14.22
17	10.80	11.10	12.64	10.84	11.20	12.70	15.11	12.04	12.82	12.70	15.06	14.68
18	11.19	11.40	13.20	11.23	11.50	13.27	15.83	12.54	13.41	13.27	15.77	15.10
19	11.55	11.68	13.74	11.60	11.77	13.83	16.53	13.02	13.99	13.83	16.46	15.48
20	11.91	11.93	14.27	11.95	12.01	14.37	17.22	13.48	14.56	14.37	17.14	15.82
21	12.24	12.15	14.78	12.28	12.23	14.89	17.90	13.92	15.11	14.89	17.80	16.13
22	12.55	12.36	15.29	12.59	12.43	15.40	18.56	14.33	15.64	15.40	18.45	16.42
23	12.84	12.54	15.77	12.89	12.61	15.90	19.20	14.73	16.16	15.90	19.09	16.67
24	13.12	12.71	16.25	13.17	12.77	16.39	19.84	15.11	16.66	16.39	19.71	16.90
25	13.38	12.86	16.71	13.44	12.92	16.87	20.46	15.47	17.15	16.87	20.32	17.12

[1] These "modified" uniform present worth discount (UPW*) factors are based on a 7 percent discount rate and include the EIA projected real escalation rates in energy prices developed from the Mid-Term Energy Forecasting System (MEFS), for the periods mid-1980 to mid-1985, mid-1985 to mid-1990, and mid-1990 to mid-1995 and beyond. The formula for calculating these UPW* factors is the following: For 1 to k escalation periods,

$$UPW^* = \sum_{j=1}^{n_1} \left(\frac{1+e_1}{1+d}\right)^j + \left(\frac{1+e_1}{1+d}\right)^{n_1} \sum_{j=1}^{n_2} \left(\frac{1+e_2}{1+d}\right)^j + \left(\frac{1+e_1}{1+d}\right)^{n_1} \left(\frac{1+e_2}{1+d}\right)^{n_2} \sum_{j=1}^{n_3} \left(\frac{1+e_3}{1+d}\right)^j + \ldots + \left(\frac{1+e_1}{1+d}\right)^{n_1} \left(\frac{1+e_2}{1+d}\right)^{n_2} \ldots \left(\frac{1+e_{k-1}}{1+d}\right)^{n_{k-1}} \sum_{j=1}^{n_k} \left(\frac{1+e_k}{1+d}\right)^j .$$

where n_k = the length of the period for a given escalation rate in a given period, and the subscript k indicates the escalation period;

d = the discount rate; and $\sum_{j=1}^{n_k} \left(\frac{1+e}{1+d}\right)^j = \left(\frac{1+e}{d-e}\right)\left(1 - \left(\frac{1+e}{1+d}\right)^{n_k}\right)$.

[2] Study Period 1 is Mid-1980 to Mid-1981.

TABLE B-11--UPW* DISCOUNT FACTORS ADJUSTED FOR ENERGY PRICE ESCALATION[1]
UNITED STATES AVERAGE

	Residential Sector			Commercial Sector				Industrial Sector				
Study Period[2]	Electricity	Natural Gas	Distillate	Electricity	Natural Gas	Distillate	Residual	Electricity	Natural Gas	Distillate	Residual	Coal
1	0.93	0.95	0.97	0.93	0.95	0.97	1.00	0.93	0.95	0.97	1.00	1.02
2	1.81	1.86	1.90	1.81	1.86	1.90	2.01	1.81	1.86	1.90	2.01	2.07
3	2.62	2.72	2.80	2.62	2.71	2.80	3.03	2.62	2.72	2.80	3.03	3.15
4	3.39	3.53	3.67	3.39	3.53	3.67	4.05	3.39	3.53	3.67	4.05	4.24
5	4.10	4.31	4.51	4.10	4.31	4.52	5.08	4.10	4.31	4.52	5.07	5.37
6	4.77	5.06	5.32	4.77	5.06	5.33	6.06	4.77	5.09	5.32	6.06	6.44
7	5.40	5.78	6.10	5.40	5.79	6.11	7.00	5.41	5.86	6.10	7.00	7.45
8	6.00	6.47	6.85	5.99	6.49	6.86	7.90	6.01	6.63	6.85	7.91	8.42
9	6.56	7.14	7.57	.55	7.17	7.58	8.77	6.59	7.40	7.57	8.78	9.33
10	7.09	7.78	8.26	7.08	7.83	8.27	9.60	7.13	8.16	8.27	9.61	10.21
11	7.58	8.39	8.93	7.57	8.45	8.95	10.41	7.63	8.90	8.94	10.43	11.02
12	8.04	8.96	9.58	8.03	9.05	9.60	11.21	8.10	9.61	9.60	11.22	11.79
13	8.46	9.50	10.22	8.45	9.61	10.24	11.98	8.54	10.30	10.24	12.00	12.52
14	8.86	10.02	10.83	8.84	10.14	10.86	12.73	8.95	10.97	10.86	12.76	13.20
15	9.23	10.50	11.43	9.20	10.64	11.47	13.47	9.33	11.61	11.47	13.51	13.84
16	9.57	10.96	12.02	9.54	11.12	12.06	14.19	9.68	12.23	12.06	14.23	14.44
17	9.89	11.40	12.58	9.86	11.57	12.63	14.89	10.01	12.83	12.63	14.94	15.01
18	10.18	11.81	13.13	10.15	11.99	13.19	15.57	10.31	13.41	13.19	15.63	15.54
19	10.45	12.20	13.67	10.42	12.40	13.73	16.24	10.59	13.97	13.73	16.31	16.04
20	10.71	12.57	14.19	10.67	12.78	14.25	16.89	10.86	14.51	14.26	16.97	16.51
21	10.94	12.91	14.69	10.91	13.15	14.77	17.53	11.10	15.03	14.77	17.62	16.95
22	11.16	13.24	15.19	11.13	13.49	15.27	18.15	11.33	15.54	15.27	18.25	17.37
23	11.37	13.56	15.66	11.33	13.82	15.75	18.76	11.54	16.03	15.76	18.87	17.76
24	11.56	13.85	16.13	11.52	14.13	16.22	19.35	11.74	16.50	16.23	19.47	18.13
25	11.73	14.13	16.58	11.69	14.42	16.68	19.93	11.93	16.95	16.69	20.06	18.47

[1] These "modified" uniform present worth discount (UPW*) factors are based on a 7 percent discount rate and include the EIA projected real escalation rates in energy prices developed from the Mid-Term Energy Forecasting System (MEFS), for the periods mid-1980 to mid-1985, mid-1985 to mid-1990, and mid-1990 to mid-1995 and beyond. The formula for calculating these UPW* factors is the following: For 1 to k escalation periods,

$$UPW^* = \sum_{j=1}^{n_1} \left(\frac{1+e_1}{1+d}\right)^j + \left(\frac{1+e_1}{1+d}\right)^{n_1} \sum_{j=1}^{n_2} \left(\frac{1+e_2}{1+d}\right)^j + \left(\frac{1+e_1}{1+d}\right)^{n_1} \left(\frac{1+e_2}{1+d}\right)^{n_2} \sum_{j=1}^{n_3} \left(\frac{1+e_3}{1+d}\right)^j + \ldots + \left(\frac{1+e_1}{1+d}\right)^{n_1} \left(\frac{1+e_2}{1+d}\right)^{n_2} \ldots \left(\frac{1+e_{k-1}}{1+d}\right)^{n_{k-1}} \sum_{j=1}^{n_k} \left(\frac{1+e_k}{1+d}\right)^j .$$

where n_k = the length of the period for a given escalation rate in a given period, and the subscript k indicates the escalation period;

d = the discount rate; and $\sum_{j=1}^{n_k} \left(\frac{1+e}{1+d}\right)^j = \left(\frac{1+e}{d-e}\right)\left(1 - \left(\frac{1+e}{1+d}\right)^{n_k}\right)$.

[2] Study Period 1 is Mid-1980 to Mid-1981.

TABLE C-1--BASE-YEAR ENERGY PRICES
(MID-1980 PRICES PER MILLION BTU IN MID-1980 DOLLARS)

DOE Region and Fuel Type	DOE 1	DOE 2	DOE 3	DOE 4	DOE 5	DOE 6	DOE 7	DOE 8	DOE 9	DOE 10	U.S. Average
RESIDENTIAL SECTOR											
Electricity	25.56	25.15	18.85	14.22	17.30	18.84	18.79	18.85	20.09	7.29	17.58
Natural Gas	4.86[a]	4.44[a]	3.95[a]	3.46[a]	3.55[a]	3.69[a]	3.50	3.62	4.34	4.58[a]	3.83[a]
Distillate	7.19	7.27	7.46	7.53	6.98	7.20	6.92	7.04	6.84	6.84	7.21
COMMERCIAL SECTOR											
Electricity	26.20	23.96	18.41	14.60	16.83	17.68	17.77	17.46	21.25	7.06	18.06
Natural Gas	4.12[a]	3.77[a]	3.43[a]	2.90[a]	3.18[a]	3.10	3.05	3.37	3.76	3.92[a]	3.33[a]
Distillate	6.94	7.01	7.05	7.06	6.78	6.94	6.73	6.80	6.55	6.55	6.91
Residual	4.96	5.03	5.29	4.96	4.97	4.97	5.00	4.88	4.73	4.57	4.99
INDUSTRIAL SECTOR											
Electricity	21.66	15.85	13.72	10.87	12.16	14.02	14.23	13.05	17.06	3.31	12.61
Natural Gas	5.81	5.77	4.77	3.90	4.16	2.76	3.24	2.83	5.43	4.89	3.58
Distillate	6.75	6.99	7.15	7.14	6.78	6.92	6.72	6.84	6.55	6.55	6.93
Residual	4.79	5.12	5.22	4.93	4.95	4.96	4.98	4.83	4.72	4.68	4.96
Coal	1.83[b]	1.63[b]	1.42[b]	1.59[b]	1.29[b]	1.49[b]	1.15[b]	0.90[b]	1.89	1.55[b]	1.46[b]

Prices are developed from average U.S. prices projected for the year 1980 as reported in "Short-Term Energy Outlook," DOE/EIA-0202/2, February 1980. Regional breakdown of 1980 prices is based on the proportional relationship of regional prices to U.S. average prices estimated by the DoE Mid-Term Energy Forecasting System (MEFS) for the year 1985. Simple arithmetic averaging of the regional prices shown will not yield the exact U.S. average prices shown due to energy consumption weighting reflected in the U.S. average prices.

a The reduction in the 1980 U.S. average price of natural gas relative to that published in the January 23, 1980, Federal Register reflects a downward revision in the EIA short-term natural gas price forecast.

b The reduction in the 1980 U.S. average price of coal relative to that published in the January 23, 1980, Federal Register reflects the current softness in the spot market for coal.

TABLE C-2--BASE-YEAR ENERGY PRICES[a]
(MID-1980 PRICES PER UNIT OF ENERGY PURCHASED IN MID-1980 DOLLARS)

DOE Region and Fuel Type	DOE 1	DOE 2	DOE 3	DOE 4	DOE 5	DOE 6	DOE 7	DOE 8	DOE 9	DOE 10	U.S. Average
RESIDENTIAL SECTOR											
Electricity (kWh)	0.091	0.086	0.064	0.049	0.059	0.064	0.064	0.064	0.069	0.025	0.060
Natural Gas (cu ft)	0.005	0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.005	0.004
Distillate (gal)	0.997	1.008	1.035	1.044	0.968	0.999	0.969	0.976	0.949	0.949	1.000
COMMERCIAL SECTOR											
Electricity (kWh)	0.089	0.082	0.063	0.050	0.057	0.060	0.061	0.060	0.073	0.024	0.062
Natural Gas (cu ft)	0.004	0.004	0.004	0.003	0.003	0.003	0.003	0.003	0.004	0.004	0.003
Distillate (gal)	0.963	0.972	0.978	0.979	0.940	0.963	0.933	0.943	0.908	0.908	0.958
Residual (gal)	0.742	0.753	0.792	0.742	0.744	0.744	0.748	0.730	0.708	0.684	0.747
INDUSTRIAL SECTOR											
Electricity (kWh)	0.074	0.054	0.047	0.037	0.041	0.048	0.049	0.045	0.058	0.011	0.043
Natural Gas (cu ft)	0.006	0.006	0.005	0.004	0.004	0.003	0.003	0.003	0.006	0.005	0.004
Distillate (gal)	0.936	0.969	0.992	0.990	0.940	0.960	0.932	0.949	0.908	0.908	0.961
Residual (gal)	0.717	0.766	0.781	0.738	0.741	0.742	0.745	0.723	0.707	0.701	0.742
Coal (ton)	41.175	36.675	31.950	35.775	29.025	33.525	25.875	20.250	42.525	34.875	32.850

[a] Note that prices in tables C-1 and C-2 are equivalent prices stated in different units of energy. table C-1 prices are per million Btu (MBtu); table C-2 are per unit of energy typically sold, e.g., kWh of electricity, cubic feet of natural gas, and gallons of oil.

Prices in table C-2 were derived from the prices in table C-1 by multiplying the price per MBtu times the ratio of the Btu content per sales unit of energy to 1 MBtu. The conversions from price per MBtu to price per sales unit are based on the following assumed equivalencies: 3,412 Btu per kWh of electricity, 1,030 Btu per cu ft of natural gas, 138,690 Btu per gallon of distillate, 149,690 Btu per gallon of residual, and 22,500,000 Btu per short ton of coal. For example, price per kWh of electricity = price per MBtu x $\frac{3,412}{1,000,000}$; hence in DoE Region 1, the price per kWh of residential electricity = $26.56 x $\frac{3,412}{1,000,000}$ = $0.091.

TABLE C-3--PROJECTED MID-1985 ENERGY PRICES
(MID-1985 PRICES PER MILLION BTU IN MID-1980 DOLLARS)

DOE Region and Fuel Type	DOE 1	DOE 2	DOE 3	DOE 4	DOE 5	DOE 6	DOE 7	DOE 8	DOE 9	DOE 10	U.S. Average
RESIDENTIAL SECTOR											
Electricity	26.54	25.12	18.84	14.21	17.29	18.82	18.77	18.84	20.08	7.28	17.56
Natural Gas	5.31	4.85	4.31	3.77	3.87	4.03	3.82	3.95	4.74	5.00	4.18
Distillate	8.49	8.59	8.81	8.90	8.24	8.50	8.17	8.32	8.07	8.07	8.51
COMMERCIAL SECTOR											
Electricity	26.19	23.94	18.40	14.59	16.82	17.67	17.76	17.44	21.24	7.05	18.05
Natural Gas	4.50	4.11	3.74	3.16	3.47	3.38	3.32	3.67	4.10	4.28	3.63
Distillate	8.19	8.28	8.33	8.34	8.01	8.19	7.95	8.03	7.73	7.73	8.16
Residual	7.13	7.23	7.60	7.13	7.15	7.14	7.20	7.01	6.79	6.58	7.17
INDUSTRIAL SECTOR											
Electricity	21.64	15.83	13.71	10.86	12.15	14.01	14.22	13.04	17.05	3.30	12.59
Natural Gas	6.35	6.30	5.21	4.26	4.54	3.02	3.53	3.09	5.93	5.34	3.91
Distillate	7.98	8.26	8.45	8.44	8.01	8.17	7.94	8.07	7.73	7.73	8.18
Residual	6.89	7.36	7.50	7.09	7.12	7.13	7.16	6.94	6.78	6.74	7.13
Coal	2.90	2.57	2.25	2.51	2.03	2.36	1.81	1.40	2.98	2.45	2.30

Prices based on DOE Mid-Term Energy Forecasting System (MEFS) Projection Series "A" (High Case).

TABLE C-4--PROJECTED MID-1990 ENERGY PRICES
(MID-1990 PRICES PER MILLION BTU IN MID-1980 DOLLARS)

DOE Region and Fuel Type	DOE 1	DOE 2	DOE 3	DOE 4	DOE 5	DOE 6	DOE 7	DOE 8	DOE 9	DOE 10	U.S. Average
RESIDENTIAL SECTOR											
Electricity	26.27	24.36	19.67	15.47	18.21	20.31	18.22	16.40	20.55	8.80	18.32
Natural Gas	6.25	5.55	5.04	4.25	4.45	5.02	4.52	4.79	5.09	6.04	4.83
Distillate	9.75	9.86	10.08	10.17	9.51	9.77	9.45	9.55	9.35	9.35	9.80
				12.49	12.02						
COMMERCIAL SECTOR											
Electricity	25.93	23.18	19.23	15.85	17.74	19.15	17.21	15.01	21.70	8.57	18.71
Natural Gas	5.44	4.82	4.46	3.63	4.05	4.37	4.02	4.52	4.45	5.33	4.31
Distillate	9.46	9.54	9.60	9.61	9.28	9.47	9.23	9.27	9.01	9.01	9.43
Residual	8.13	8.25	8.61	8.15	8.17	8.16	8.22	8.00	7.81	7.60	8.16
INDUSTRIAL SECTOR											
Electricity	21.39	15.07	14.55	12.11	13.08	15.49	13.67	10.61	17.52	4.83	13.45
Natural Gas	7.66	7.83	7.98	6.49	6.36	4.02	6.15	3.94	6.97	7.22	5.39
Distillate	9.46	9.52	9.72	9.71	9.28	9.45	9.21	9.31	9.01	9.01	9.46
Residual	8.19	8.37	8.52	8.11	8.14	8.15	8.18	7.93	7.81	7.76	8.14
Coal	3.12	2.79	2.48	2.73	2.20	2.53	1.97	1.40	3.19	2.75	2.50

Prices based on DOE Mid-Term Energy Forecasting System (MEFS) Projection Series "A" (High Case).

TABLE C-5—PROJECTED MID-1995 ENERGY PRICES
(MID-1995 PRICES PER MILLION BTU IN MID-1980 PRICES)

DOE Region and Fuel Type	DOE 1	DOE 2	DOE 3	DOE 4	DOE 5	DOE 6	DOE 7	DOE 8	DOE 9	DOE 10	U.S. Average
RESIDENTIAL SECTOR											
Electricity	21.93	23.86	19.32	15.84	18.09	20.04	18.20	14.47	18.24	9.29	17.80
Natural Gas	6.88	6.03	5.44	4.46	4.67	5.64	4.80	5.39	5.16	5.17	5.13
Distillate	11.85	11.97	12.20	12.29	11.63	11.89	11.56	11.66	11.44	11.44	11.92
COMMERCIAL SECTOR											
Electricity	21.59	22.67	18.88	16.24	17.62	18.89	17.19	13.09	19.41	9.06	18.17
Natural Gas	6.06	5.30	4.88	3.85	4.28	4.98	4.30	5.11	4.52	4.44	4.62
Distillate	11.55	11.66	11.72	11.73	11.40	11.58	11.34	11.38	11.10	11.10	11.53
Residual	10.11	10.24	10.61	10.16	10.21	10.20	10.26	10.02	9.82	9.62	10.14
INDUSTRIAL SECTOR											
Electricity	17.04	14.57	14.18	12.49	12.96	15.23	13.65	8.69	15.22	5.32	13.16
Natural Gas	9.64	9.81	7.60	7.69	7.71	4.63	9.73	4.53	7.30	8.78	6.35
Distillate	11.55	11.64	11.84	11.83	11.40	11.56	11.33	11.42	11.10	11.10	11.57
Residual	10.18	10.36	10.51	10.11	10.18	10.19	10.21	9.95	9.82	9.76	10.17
Coal	2.61	2.93	2.62	2.84	2.31	2.61	2.05	1.45	3.35	2.38	2.58

Prices based on DOE Mid-Term Energy Forecasting System (MEFS) Projection Series "A" (High Case).

TABLE C-6—ENERGY PRICE ESCALATION RATES MID-1980 TO MID-1985[a]
(PERCENTAGE CHANGE COMPOUNDED ANNUALLY)

DOE Region and Fuel Type	DOE 1	DOE 2	DOE 3	DOE 4	DOE 5	DOE 6	DOE 7	DOE 8	DOE 9	DOE 10	U.S. Average
RESIDENTIAL SECTOR											
Electricity	-0.02	-0.02	-0.02	-0.02	-0.01	-0.02	-0.02	-0.02	-0.01	-0.02	-0.02
Natural Gas	1.78	1.78	1.77	1.75	1.75	1.76	1.75	1.76	1.77	1.78	1.76
Distillate	3.38	3.39	3.38	3.39	3.37	3.38	3.38	3.39	3.37	3.37	3.38
COMMERCIAL SECTOR											
Electricity	-0.01	-0.02	-0.01	-0.01	-0.02	-0.01	-0.01	-0.02	-0.01	-0.02	-0.02
Natural Gas	1.77	1.76	1.75	1.73	1.74	1.74	1.73	1.75	1.76	1.76	1.75
Distillate	3.38	3.39	3.38	3.38	3.39	3.38	3.40	3.38	3.38	3.38	3.39
Residual	7.53	7.52	7.52	7.53	7.55	7.52	7.55	7.51	7.50	7.57	7.53
INDUSTRIAL SECTOR											
Electricity	-0.01	-0.03	-0.01	-0.02	-0.01	-0.02	-0.02	-0.01	-0.01	-0.05	-0.03
Natural Gas	1.80	1.76	1.78	1.76	1.77	1.79	1.74	1.80	1.79	1.79	1.75
Distillate	3.39	3.40	3.39	3.39	3.39	3.38	3.40	3.37	3.38	3.38	3.38
Residual	7.54	7.53	7.53	7.53	7.54	7.53	7.54	7.53	7.51	7.55	7.53
Coal	9.62	9.51	9.63	9.58	9.49	9.62	9.50	9.30	9.56	9.56	9.55

[a] Derived from DOE 1980 and 1985 Price Forecasts shown in Tables C-1 and C-3.

TABLE C-7—ENERGY PRICE ESCALATION RATES MID-1985 TO MID-1990[a]
(PERCENTAGE CHANGE COMPOUNDED ANNUALLY)

DOE Region and Fuel Type	DOE 1	DOE 2	DOE 3	DOE 4	DOE 5	DOE 6	DOE 7	DOE 8	DOE 9	DOE 10	U.S. Average
RESIDENTIAL SECTOR											
Electricity	-0.02	-0.61	0.87	1.72	1.04	1.53	-0.59	-2.73	0.47	3.85	0.85
Natural Gas	3.33	2.74	3.15	2.38	2.84	4.53	3.43	3.95	1.44	3.86	2.92
Distillate	2.81	2.80	2.74	2.71	2.91	2.83	2.94	2.82	2.97	2.97	2.85
COMMERCIAL SECTOR											
Electricity	-0.19	-0.64	0.89	1.67	1.07	1.62	-0.63	-2.96	0.43	3.97	0.73
Natural Gas	3.88	3.20	3.60	2.82	3.15	5.26	3.85	4.22	1.66	4.50	3.49
Distillate	2.91	2.88	2.89	2.88	2.99	2.93	3.01	2.91	3.09	3.09	2.94
Residual	2.66	2.68	2.52	2.71	2.70	2.71	2.69	2.67	2.84	2.92	2.61
INDUSTRIAL SECTOR											
Electricity	-0.23	-0.98	1.19	2.20	1.47	2.03	-0.78	-4.05	0.55	7.89	1.32
Natural Gas	3.81	4.46	8.89	8.82	6.98	5.88	11.74	4.95	3.26	6.20	6.64
Distillate	3.47	2.88	2.85	2.85	2.99	2.94	3.02	2.90	3.09	3.09	2.93
Residual	3.53	2.60	2.58	2.73	2.71	2.71	2.70	2.69	2.87	2.86	2.68
Coal	1.47	1.65	1.97	1.69	1.67	1.45	1.76	0.00	1.36	2.39	1.66

[a] Derived from DOE Mid-Term Energy Price Forecasts shown in Tables C-3 and C-4.

TABLE C-8—ENERGY PRICE ESCALATION RATES MID-1990 TO MID-1995 AND BEYOND[a]
(PERCENTAGE CHANGE COMPOUNDED ANNUALLY)

DOE Region and Fuel Type	DOE 1	DOE 2	DOE 3	DOE 4	DOE 5	DOE 6	DOE 7	DOE 8	DOE 9	DOE 10	U.S. Average
RESIDENTIAL SECTOR											
Electricity	-3.55	-0.42	-0.36	0.48	-0.13	-0.26	-0.02	-2.47	-2.35	1.10	-0.57
Natural Gas	1.92	1.68	1.56	1.01	0.97	2.33	1.23	2.36	0.26	-3.09	1.24
Distillate	3.97	3.95	3.89	3.86	4.10	4.00	4.13	4.06	4.13	4.13	4.01
COMMERCIAL SECTOR											
Electricity	-3.60	-0.44	-0.37	0.48	-0.14	-0.28	-0.03	-2.70	-2.21	1.13	-0.59
Natural Gas	2.16	1.93	1.80	1.18	1.11	2.67	1.38	2.49	0.29	-3.58	1.39
Distillate	4.08	4.09	4.07	4.06	4.20	4.12	4.22	4.18	4.27	4.27	4.09
Residual	4.47	4.41	4.26	4.50	4.56	4.56	4.54	4.60	4.68	4.82	4.43
INDUSTRIAL SECTOR											
Electricity	-4.45	-0.68	-0.50	0.63	-0.19	-0.34	-0.03	-3.91	-2.78	1.97	-0.43
Natural Gas	4.72	4.60	-0.95	3.41	3.92	2.89	9.60	2.84	0.93	3.99	3.35
Distillate	4.08	4.10	4.02	4.02	4.20	4.13	4.22	4.16	4.27	4.27	4.12
Residual	4.43	4.35	4.28	4.52	4.58	4.57	4.53	4.64	4.68	4.71	4.55
Coal	-3.47	1.00	1.12	0.79	0.98	0.60	0.77	0.62	0.94	-2.87	0.61

[a] Derived from DOE Mid-Term Energy Price Forecasts shown in tables C-4 and C-5, and assumed to extend up to 10 years beyond mid-1995 to encompass a study period of 25 years beginning in 1980.

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